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bits per pixel *n.* Also known as color depth or bit depth. The term refers to the number of bits (8, 16, 24, or 32) used to store and display the color data for a single pixel. The number of bits per pixel determines the range of color available to an image. *Acronym:* bpp.

bits per second *n.* *See* bps.

bit stream *n.* **1.** A series of binary digits representing a flow of information transferred through a given medium. **2.** In synchronous communications, a continuous flow of data in which characters in the stream are separated from one another by the receiving station rather than by markers, such as start and stop bits, inserted into the data.

bit stuffing *n.* The practice of inserting extra bits into a stream of transmitted data. Bit stuffing is used to ensure that a special sequence of bits appears only at desired locations. For example, in the HDLC, SDLC, and X.25 communications protocols, six 1 bits in a row can appear only at the beginning and end of a frame (block) of data, so bit stuffing is used to insert a 0 bit into the rest of the stream whenever five 1 bits appear in a row. The inserted 0 bits are removed by the receiving station to return the data to its original form. *See also* HDLC, SDLC, X.25.

bit transfer rate *n.* *See* transfer rate.

bit twiddler *n.* Slang for someone devoted to computers, particularly one who likes to program in assembly language. *See also* hacker.

BIX *n.* Acronym for **BYTE** Information Exchange. An online service originated by *BYTE* magazine, now owned and operated by Delphi Internet Services Corporation. BIX offers e-mail, software downloads, and conferences relating to hardware and software.

.biz *n.* One of seven new top-level domain names approved in 2000 by the Internet Corporation for Assigned Names and Numbers (ICANN), .biz is meant for use in business-related Web sites.

biz. news groups *n.* Usenet newsgroups that are part of the biz. hierarchy and have the prefix of biz. These newsgroups are devoted to discussions related to business. Unlike most other newsgroup hierarchies, biz. newsgroups permit users to post advertisement and other marketing material. *See also* newsgroup, traditional newsgroup hierarchy.

BizTalk Server *n.* An application developed by Microsoft Corporation to streamline business processes within a large company's internal network and between business partners over the Internet. BizTalk Server enables the integration of business applications written in different computer languages and running on various operating systems.

BlackBerry *n.* A wireless handheld device that allows mobile users to send and receive e-mail, as well as view appointment calendars and contact lists. The BlackBerry features a display screen and a built-in keyboard operated by pressing the keys with the thumbs. BlackBerry's ease of use and its ability to send and receive messages silently have made it a popular device for wireless text messaging in a business environment.

black box *n.* A unit of hardware or software whose internal structure is unknown but whose function is documented. The internal mechanics of the function do not matter to a designer who uses a black box to obtain that function. For example, a memory chip can be viewed as a black box. Many people use memory chips and design them into computers, but generally only memory chip designers need to understand their internal operation.

black box testing *n.* An approach to testing software in which the tester treats the software as a black box—that is, the testing focuses on the program's functionality rather than on its internal structure. Black box testing is thus user oriented, in that the primary concern is whether the program works, not how it is constructed. Black box testing is generally performed on software that is under development. *Compare* white box testing.

black hat *n.* A hacker who operates with malicious or criminal intent. A black hat will break into a system to alter or damage data or to commit theft. *Compare* white hat.

black hole *n.* A mysterious "place" on a computer network where messages, such as e-mail and news items, disappear without a trace. The usage is derived from stellar black holes, which have such strong gravitational fields that even light cannot escape them. The term is sometimes also used to refer to projects that consume vast amounts of time with no apparent product.

blackout *n.* A condition in which the electricity level drops to zero; a complete loss of power. A number of factors cause a blackout, including natural disasters, such as a storm or an earthquake, or a failure in the power company's

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receives from its neighboring cells, and all cells output their values simultaneously. **2.** Systems in which rules are applied to multiple cells and their neighbors in a regular spatial lattice or grid that advances through time. Usually, each cell in a cellular automaton has any one state out of a finite number of states. The state changes discretely in time according to rules that depend on the condition of the individual cell and its neighbors. Thus, an individual cell in a cellular automaton takes a neighbor cell's state as input before outputting its own state. Additionally, all the cells in the lattice are updated simultaneously, while the state of the entire lattice also advances discretely in time. Many computer simulations of cellular automata are demonstrated on Web sites; the best known Web example is J.H. Conway's Game of Life.

Cellular Digital Packet Data *n.* A wireless standard providing two-way, 19.2-Kbps packet data transmission over existing cellular telephone channels. *Acronym:* CDPD. *See also* packet, wireless.

Cellular Telecommunications and Internet Association *n.* Association based in Washington, D.C. that represents the wireless telecommunications industry and its equipment manufacturers. *Acronym:* CTIA.

censorship *n.* The action of preventing material that a party considers objectionable from circulating within a system of communication over which that party has some power. The Internet as a whole is not censored, but some parts of it come under varying degrees of control. A news server, for example, often is set to exclude any or all of the alt. newsgroups, such as alt.sex.* or alt.music.white-power, which are unmoderated and tend to be controversial. A moderated newsgroup or mailing list might be considered to be "censored" because the moderator will usually delete highly controversial and obscene content or content that is on a different topic from that followed by the newsgroup. Online services have identifiable owners, who often take some share of responsibility for what reaches their users' computer screens. In some countries, censorship of certain political or cultural Web sites is a matter of national policy.

sensorware *n.* Software that imposes restrictions on what Internet sites, newsgroups, or files may be accessed by the user.

center *vb.* To align characters around a point located in the middle of a line, page, or other defined area; in effect, to place text an equal distance from each margin or border. *See also* align (definition 1).

centi- *prefix* **1.** One hundred. **2.** One hundredth, as in *centimeter*—one hundredth of a meter.

centralized network *n.* A network in which nodes connect to and use resources on a single central computer, typically a mainframe.

centralized processing *n.* The location of computer processing facilities and operations in a single (centralized) place. *Compare* decentralized processing, distributed processing.

central office *n.* In communications, the switching center where interconnections between customers' communications lines are made.

central office exchange service *n.* *See* Centrex.

central processing unit *n.* *See* CPU.

Centrex *n.* An option offered by some phone companies in which up-to-date phone facilities are available to business customers, giving the customer access to a complete range of phone services without having to purchase or maintain the necessary equipment. Customers can purchase just the lines and services they will use. The name *central office exchange* refers to the fact that the phone facilities for Centrex services, particularly switching services, are generally maintained at the offices of the local or central phone company. Since Centrex offers a wider range of services, it is replacing PBX for businesses. *See also* switching. *Compare* PBX.

Centronics parallel interface *n.* A de facto standard for parallel data exchange paths between computers and peripherals, originally developed by the printer manufacturer Centronics, Inc. The Centronics parallel interface provides eight parallel data lines plus additional lines for control and status information. *See also* parallel interface.

CERN *n.* Acronym for **C**onseil **E**uropéen pour la **R**echerche **N**ucléaire (the European Laboratory for Particle Physics). CERN, a physics research center located in Geneva, Switzerland, is where the original development of the World Wide Web took place by Tim Berners-Lee in 1989 as a method to facilitate communication among members of the scientific community. *See also* NCSA (definition 1).

CERN server *n.* One of the first Hypertext Transfer Protocol (HTTP) servers, developed at CERN by Tim Berners-Lee. The CERN server is still in wide use and is free of charge. *See also* CERN, HTTP server (definition 1).

CERT *n.* Acronym for **C**omputer **E**mergency **R**esponse **T**eam. An organization that provides a round-the-clock

unit of elements, or the elements can be accessed individually. *See also* array, data structure, type¹ (definition 1).

record² *vb.* To retain information, usually in a file.

record format *n.* *See* record structure.

record head *n.* The device in a tape machine that places data on the tape. In some tape machines, the record head is combined with the read head.

record layout *n.* The organization of data fields within a record. *See also* record¹.

record length *n.* The amount of storage space required to contain a record, typically given in bytes. *See also* record¹.

record locking *n.* A strategy employed in distributed processing and other multiuser situations to prevent more than one user at a time from writing data to a record. *See also* record¹.

record number *n.* A unique number assigned to a record in a database in order to identify it. A record number can identify an existing record by its position (for example, the tenth record from the beginning of a database), or it can be assigned to the record to serve as a key (for example, the number 00742 assigned to the tenth record from the beginning of the database). *See also* record¹.

record structure *n.* An ordered list of the fields that compose a record, together with a definition of the domain (acceptable values) of each field. *See also* record¹.

recover *vb.* **1.** To return to a stable condition after some error has occurred. A program recovers from an error by stabilizing itself and resuming execution of instructions without user intervention. **2.** To put back into a stable condition. A computer user may be able to recover lost or damaged data by using a program to search for and salvage whatever information remains in storage. A database may be recovered by restoring its integrity after some problem has damaged it, such as abnormal termination of the database management program.

recoverable error *n.* An error that can be successfully managed by software. For example, when the user enters a number when a letter is required, the program can simply display an error message and prompt the user again.

recovery *n.* The restoration of lost data or the reconciliation of conflicting or erroneous data after a system failure. Recovery is often achieved using a disk or tape backup and system logs. *See also* backup.

Recreational Software Advisory Council *n.* An independent, nonprofit organization established in the fall of 1994 by a group of six trade organizations, led by the Software Publishers Association. The Council's goal was to create a new, objective content-labeling rating system for recreational software and other media such as the Internet. *Acronym:* RSAC.

rectangle ad *n.* An Internet ad format that is larger than a traditional banner ad and is generally inserted directly into page content for greater visibility.

rectifier *n.* A circuit component that passes current flowing in one direction but stops current flowing in the other direction. Rectifiers are used to convert alternating current to direct current.

recto *n.* The right-hand page of two facing pages. A recto is characteristically an odd-numbered page. *Compare* verso.

recursion *n.* The ability of a routine to call itself. Recursion enables certain algorithms to be implemented with small, simple routines, but it does not guarantee speed or efficiency. Erroneous use of recursion can cause a program to run out of stack space during execution, causing the program, and sometimes the entire system, to crash. *See also* call¹ (definition 2), routine.

Recycle Bin *n.* A folder in Windows 9x, Windows CE, Windows NT, Windows 2000, and Windows XP represented by an icon on the screen resembling a basket decorated with the recycling logo. To remove a file, the user drags its icon to the Recycle Bin. However, a file in the Recycle Bin is not actually deleted from the disk until the user opens the Recycle Bin, selects the file, and presses the Delete key; until then, the user can retrieve it. *Compare* Trash.

Red Book *n.* **1.** The standards documents of the U.S. National Security Agency entitled "Trusted Network Interpretation of the Trusted Computer System Evaluation Criteria (NCSC-TG-005)" and "Trusted Network Interpretation (NCS-TG-011)." These documents define a system of ratings from A1 (most secure) to D (nonsecure), indicating the ability of a computer network to protect sensitive information. *Compare* Orange Book (definition 1). **2.** A specifications book written by the Sony Corporation and Philips Corporation and endorsed by ISO, covering audio compact discs. *Compare* Green Book, Orange Book (definition 2). **3.** Telecommunications standards published by the CCITT.

red-green-blue *n.* *See* RGB.

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statistical multiplexer *n.* A multiplexing device that adds intelligence to time-division multiplexing by using buffering (temporary storage) and a microprocessor to combine transmission streams into a single signal and to allocate available bandwidth dynamically. *Also called:* stat mux. *See also* dynamic allocation, multiplexing, time-division multiplexing.

statistics *n.* The branch of mathematics that deals with the relationships among groups of measurements and with the relevance of similarities and differences in those relationships. *See also* binomial distribution, Monte Carlo method, probability, regression analysis, standard deviation, stochastic.

stat mux *n.* *See* statistical multiplexer.

status *n.* The condition at a particular time of any of numerous elements of computing—a device, a communications channel, a network station, a program, a bit, or other element—used to report on or to control computer operations.

status bar *n.* In Windows 9x and Windows NT 4 and later, a space at the bottom of many program windows that contains a short text message about the current condition of the program. Some programs also display an explanation of the currently selected menu command in the status bar. *See* the illustration.

Status bar.

status codes *n.* Strings of digits or other characters that indicate the success or failure of some attempted action. Status codes were commonly used to report the results of early computer programs, but most software today uses words or graphics. Internet users, especially those with UNIX shell accounts, are likely to encounter status codes while using the Web or FTP. *See also* HTTP status codes.

steganography *n.* A “hide-in-plain-sight” technique for concealing information by embedding a message within an innocuous cover message. In steganography, bits of unnecessary data within an image, sound, text, or even a blank file are replaced with bits of invisible information. The term steganography comes from the Greek for “covered writing” and has traditionally included any method of secret communication that conceals the existence of the message. Because steganography cannot be detected by decryption software, it is often used to replace or supplement encryption.

step-frame *n.* The process of capturing video images one frame at a time. This process is used by computers that are too slow to capture analog video images in real time.

stepper motor *n.* A mechanical device that rotates only a fixed distance each time it receives an electrical pulse. A stepper motor is part of a disk drive.

step-rate time *n.* The time required to move a disk actuator arm from one track to the next. *See also* actuator, stepper motor.

stereogram *n.* *See* autostereogram.

sticky *adj.* In reference to a Web site, properties such as targeted content or services that increase the amount of time users choose to spend at the site and increase user’s desire to return to the site repeatedly.

StickyKeys *n.* An accessibility feature built into Macintosh and Windows computers that causes modifier keys such as Shift, Control, or Alt to “stay on” after they are pressed, eliminating the need to press multiple keys simultaneously. This feature facilitates the use of modifier keys by users who are unable to hold down one key while pressing another.

stochastic *adj.* Based on random occurrences. For example, a stochastic model describes a system by taking into account chance events as well as planned events.

stop bit *n.* In asynchronous transmission, a bit that signals the end of a character. In early electromechanical teleprinters, the stop bit provided time for the receiving mechanism to coast back to the idle position and, depending on the mechanism, had a duration of 1, 1.5, or 2 data bits. *See also* asynchronous transmission. *Compare* parity bit, start bit.

Stop error *n.* A serious error that affects the operating system and that could place data at risk. The operating system generates an obvious message, a screen with the Stop error, rather than continuing on and possibly corrupting data. *Also called:* blue screen error, fatal system error. *See also* Blue Screen of Death.

storage *n.* In computing, any device in or on which information can be kept. Microcomputers have two main types of storage: random access memory (RAM) and disk drives and other external storage media. Other types of storage include read-only memory (ROM) and buffers.

storage area network *n.* A high-speed network that provides a direct connection between servers and storage, including shared storage, clusters, and disaster-recovery

devices. A storage area network, or SAN, includes components such as hubs and routers that are also used in local area networks (LANs), but it differs in being something of a “subnetwork” dedicated to providing a high-speed connection between storage elements and servers. Most SANs rely on fiber-channel connections that deliver speeds up to 1000 Mbps and can support up to 128 devices. SANs are implemented to provide the scalability, speed, and manageability required in environments that demand high data availability. *Acronym: SAN. Also called: system area network.*

storage device *n.* An apparatus for recording computer data in permanent or semipermanent form. When a distinction is made between primary (main) storage devices and secondary (auxiliary) storage devices, the former refers to random access memory (RAM) and the latter refers to disk drives and other external devices.

storage location *n.* The position at which a particular item can be found—either an addressed location or a uniquely identified location on a disk, tape, or similar medium.

storage media *n.* The various types of physical material on which data bits are written and stored, such as floppy disks, hard disks, tape, and optical discs.

storage tube *n.* *See* direct view storage tube.

store-and-forward *n.* A method of delivering transmissions in which messages are held temporarily by an intermediary before being sent on to their destination. Store and forward is used by some switches in delivering packets to their destinations. *Compare* cut-through switch.

stored procedure *n.* A precompiled collection of SQL statements and optional control-of-flow statements stored under a name and processed as a unit. They are stored in an SQL database and can be run with one call from an application.

stored program concept *n.* A system architecture scheme, credited largely to the mathematician John von Neumann, in which both programs and data are in direct-access storage (random access memory, or RAM), thereby allowing code and data to be treated interchangeably. *See also* von Neumann architecture.

storefront *n.* *See* virtual storefront.

storm *n.* On a network, a sudden, excessive burst of traffic. Storms are often responsible for network outages.

STP *n.* Acronym for shielded twisted pair. A cable consisting of one or more twisted pairs of wires and a sheath

of foil and copper braid. The twists protect the pairs from interference by each other, and the shielding protects the pairs from interference from outside. Therefore, STP cable can be used for high-speed transmission over long distances. *See also* twisted-pair cable. *Compare* UTP.

straight-line code *n.* Program code that follows a direct sequence of statements rather than skipping ahead or jumping back via transfer statements such as GOTO and JUMP. *See also* GOTO statement, jump instruction. *Compare* spaghetti code.

stream¹ *n.* Any data transmission, such as the movement of a file between disk and memory, that occurs in a continuous flow. Manipulating a data stream is a programming task. Consumers, however, are likely to encounter references to streams and streaming in connection to the Internet, which has increased reliance on stream techniques to enable users (even those with slower equipment) to access large multimedia files—especially those containing audio and video components—and to display or play them before all the data has been transferred.

stream² *vb.* To transfer data continuously, beginning to end, in a steady flow. Many aspects of computing rely on the ability to stream data: file input and output, for example, and communications. If necessary, an application receiving a stream must be able to save the information to a buffer in order to prevent loss of data. On the Internet, streaming enables users to begin accessing and using a file before it has been transmitted in its entirety.

stream cipher *n.* A method for encrypting a data sequence of unlimited length using a key of fixed length. *See also* key (definition 3). *Compare* block cipher.

streaming *n.* **1.** On the Internet, the process of delivering information, especially multimedia sound or video, in a steady flow that the recipient can access as the file is being transmitted. **2.** In magnetic tape storage devices, a low-cost technique to control the motion of the tape by removing tape buffers. Although streaming tape compromises start/stop performance, it achieves highly reliable storage and retrieval of data, and is useful when a steady supply of data is required by a particular application or computer.

streaming buffer *n.* A small sound buffer that can play lengthy sounds because the application dynamically loads audio data into the buffer as it plays. For example, an application could use a buffer that can hold 3 seconds of audio data to play a 2-minute sound. A streaming buffer requires much less memory than a static buffer. *See also* static buffer.

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necessary to run the Windows operating environment. The win.ini file has been supplanted by the registry database in Windows 95 and later and Windows NT and later. *See also* configuration file, ini file, registry.

Winipcfg *n.* Short for **Windows IP Configuration**. A Windows 9x utility that enables users to access information about their TCP/IP (Transmission Control Protocol/Internet Protocol) and network adapter card settings. Running the Winipcfg program (winipcfg.exe) opens the IP Configuration window, which reveals the physical address, IP address, subnet mask, and default gateway settings of the primary TCP/IP adapter (or settings of multiple adapters if more than one is installed). This information is also helpful for troubleshooting. *See also* TCP/IP.

WINS *n.* Acronym for **Windows Internet Naming Service**. A Windows NT Server method for associating a computer's host name with its address. *Also called:* INS, Internet Naming Service. *Compare* DNS (definition 1).

Winsock *n.* Short for **Windows Sockets**. An application programming interface standard for software that provides a TCP/IP interface under Windows. The Winsock standard developed out of a Birds of a Feather (BOF) discussion that arose among software vendors at a UNIX conference in 1991; it has gained the general support of software developers, including Microsoft. *See also* application programming interface, BOF, socket (definition 1), sockets API, TCP/IP.

Wintel *adj.* Of, pertaining to, or characteristic of a computer that uses the Microsoft Windows operating system and an Intel central processing unit (CPU). *See also* Windows.

wired *adj.* **1.** Of, pertaining to, or characteristic of an electronic circuit or hardware grouping in which the configuration is determined by the physical interconnection of the components (as opposed to being programmable in software or alterable by a switch). *See also* hardwired (definition 1). **2.** Knowledgeable about Internet resources, systems, and culture. **3.** Having access to the Internet.

Wired Equivalent Privacy *n.* *See* WEP.

wired home *n.* *See* smart home.

wire-frame model *n.* In computer graphics applications such as CAD programs, a representation of a three-dimensional object using separate lines that resemble strands of wire joined to create a model. *Compare* solid model, surface modeling.

wireless *adj.* Of, pertaining to, or characteristic of communications that take place without the use of interconnecting wires or cables, such as by radio, microwave, or infrared light.

Wireless Application Protocol *n.* A specification for a global standard for enabling digital cellular phones and other wireless devices to access Internet and other information services. The Wireless Application Protocol, or WAP, is supported by an organization known as WAP Forum, which includes such members as Motorola, Nokia, L. M. Ericsson, and Unwired Planet. The goal of the forum is to create an open standard that works with different wireless technologies. *Acronym:* WAP.

wireless communication *n.* Communication between a computer and another computer or device without wires. The form of wireless communication provided as part of the Windows operating system uses infrared light to transmit files. Radio frequencies, as used by cellular and cordless telephones, are another form of wireless communication. *See also* infrared, infrared device, infrared port.

Wireless Information Device *n.* *See* WID.

wireless Internet *n.* Version of the Internet designed for use on wireless phones and handheld devices with small display screens, limited memory, and slower data transmission speeds than a personal computer. Most wireless Internet sites offer content as basic text with limited graphics.

wireless LAN *n.* A LAN (local area network) that sends and receives data via radio, infrared optical signaling, or some other technology that does not require a physical connection between individual nodes and the hub. Wireless LANs are often used in office or factory settings where a user must carry a portable computer from place to place. *Also called:* WLAN.

Wireless Markup Language *n.* *See* WML.

Wireless Multimedia Forum *n.* *See* WMF (definition 2).

wireless phone *n.* Telephone that operates by means of radio waves without a wire connection. A base station (cell tower) relays the phone's signal to a wireless carrier's network, where it is transmitted to another wireless phone or to a wired telephone network.

Wireless Services server component *n.* A component that allows a content provider or carrier to configure and schedule any number of information acquisition/encoding/transmission components to create a data stream to be transmitted by a carrier to a device. The server component builds